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## PROCEEDINGS OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION.

THIRD ANNUAL MEETING HELD AT PRINCETON UNIVERSITY,  
PRINCETON, N. J., DECEMBER, 27 AND 28, 1894.

### *Report of the Secretary and Treasurer for 1894.*

The third annual meeting of the American Psychological Association was held at Princeton College, Princeton, N. J., on Dec. 27 and 28, 1894. Prof. William James, president of the association, presided over the sessions, which lasted from 10.30 A. M. on Dec. 27 to 4.30 P. M. on Dec. 28. President Patton of Princeton College made an address of welcome on Thursday afternoon, and entertained the members of the association in the evening after the address of the president of the association. Abstracts of the papers read at the meeting are subjoined. Papers by Prof. Starr and Prof. Hume were presented in the absence of their authors and papers offered by Prof. Jastrow, Prof. Delabarre, Prof. Titchener, Mr. Pierce and Dr. Witmer were not read.

The members in attendance were Alexander, Baldwin, Cattell, Chrysostom, Farrand, Hyslop, Franklin, James, Ladd, MacDonald, Marshall, Mead, Mezes, Mills, Miller, Newbold, Ormond, Pace, Royce, Sanford, Strong, Warren—twenty-two in all.

The following nominations for membership were made by the council and the elections were made by the association :

Prof. Archibald Alexander, New York ; Dr. John Bigham, University of Michigan ; Prof. Charles L. Dana, Bellevue Medical College ; Mr. E. A. Kirkpatrick, Winona, Minn. ; Dr. A. Kirschmann, University of Toronto ; Prof. S. E. Mezes, University of Texas ; Mr. W. Shaw, Wesleyan University ; Prof. James Seth, Brown University ; Prof. Paul Shorey, University of Chicago ; Prof. H. M. Stanley, Lake Forest University ; Dr. Margaret Washburn, Wells College.

A constitution was adopted as follows :

### CONSTITUTION OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION.

ARTICLE I. *Object.* The object of the association is the advancement of psychology as a science. Those are eligible for membership who are engaged in this work.

ART. II. *The Council.* A council shall be elected from the members of the association as an executive. The council shall consist of six members, two being elected annually for a term of three years. The president shall be *ex-officio* a member of the council. The council shall nominate officers for the association, shall nominate new members and shall make other recommendations concerning the conduct of the association. The resolutions of the

council shall be brought before the association and decided by a majority vote.

ART. III. *Officers.* There shall be annually nominated by the council and elected by the association a president, and a secretary, and a treasurer, who shall perform the usual duties of these officers.

ART. IV. *Annual Subscription.* The annual subscription shall be three dollars (\$3.00) in advance. Non-payment of dues for two consecutive years shall be considered as equivalent to resignation from the association.

ART. V. *Executive Committee.* The president, the secretary and a member from the place where the meeting is held shall be a committee to make necessary arrangements for the annual meeting.

ART. VI. *Proceedings.* Such proceedings shall be printed by the secretary as the association may direct.

ART. VII. *Amendments.* Amendments to the constitution must be adopted by a majority vote at two consecutive annual meetings.

As prescribed by the constitution, a council was elected as follows:

Term expiring 1897:

Prof. G. T. Ladd, Yale University.

Prof. J. McKeen Cattell, Columbia College.

Term expiring 1896:

Prof. J. Mark Baldwin, Princeton University.

Prof. William James, Harvard University.

Term expiring 1895:

Prof. John Dewey, University of Chicago.

Prof. G. S. Fullerton, University of Pennsylvania.

Prof. J. McKeen Cattell was elected president, and Prof. E. C. Sanford, secretary and treasurer for the coming year.

An invitation was received from the American Society of Naturalists inviting the association to affiliate with it. The question was referred to the council with power to act. Invitations were received for the meeting of 1895 from Harvard University and from the University of Chicago. The decision as to place of meeting was left with the council, with the recommendation that the association meet, if possible, at the same time and place as the Society of Naturalists. It was resolved that the minutes should be printed in such journals as were prepared to print them in full.

The report of the treasurer is as follows:

#### RECEIPTS.

Balance on hand,	\$69 50
2 dues 1893,	6 00
38 dues 1894,	114 00
Sales of proceedings,	1 60
	<hr/>
	\$191 10

#### EXPENDITURES.

Printing Proceedings for 1893, as per	
Messrs. Macmillan & Co.'s voucher,	\$55 93
Postage, expressage and stationery,	8 00
	<hr/>
	63 93

Balance on hand, \$127 17

The account was audited by the council and approved.

J. McKEEN CATTELL,  
Secretary, 1894.

## ABSTRACTS OF PAPERS.

- (1) *The Knowing of Things Together*. Address by the President, PROF. WILLIAM JAMES, Harvard University.

The synthetic unity of consciousness is one of the great dividing questions in the philosophy of mind. We know things singly through as many distinct mental states. But on another occasion we may know the same things together through one state. The problem is as to the relation of the previous many states to the later one state. It will not do to make the mere statement of this problem incidentally involve a particular solution as we should if we formulated the fact to be explained as *the combination of many states of mind into one*. The fact presents itself in the first instance as *the knowing of many things together*, and it is in those terms that the solution must be approached.

In the first place *what is knowing?*

1. *Conceptual* knowing is an external relation between a state of mind and remote objects. If the state of mind, through a context of associates which the world supplies, leads to the objects smoothly and terminates there, we say it knows them. 2. *Intuitive* knowing is the identity of what taken in one world-context we call mental content and in another object. In neither 1 nor 2 is there involved any mysterious self-transcendency or presence in absence. 3. This mystery does, however, seem involved in *the relation between the parts of a mental content itself*. In the minimum real state of consciousness, that of the *passing moment*, past and present are known at once. In desire, memory, etc., earlier and later elements are directly felt to *call for* or *fulfill* each other, and without this sense of mutuality in their parts, such states do not exist. Here is presence in absence; here knowing together; here the original prototype of what we *mean* by knowledge. This ultimate synthetic nature of the smallest real phenomenon of consciousness can neither be explained nor circumvented.

We can only trace the particular conditions by which particular contents come thus to figure with all their parts at once in consciousness. Several attempts were then briefly passed in review. Mere synchronical sense-impression is not a sufficient condition. An additional inner *event* is required. The event has been described: *physiologically* as (1) attention; as (2) ideational processes added to the sensorial processes, the latter giving unity, the former manyness; as (3) motor synergy of processes; *psychologically* as (4) the thinking of relations between the parts of the content-object; as (5) the relating of each part to the self; *spiritually* as (6) an act of the soul; *transcendentally* as (7) the diminution (by unknown causes, possibly physiological) of the obstruction or limitation which the organism imposes on the natural knowing-of-all-things-together by an Absolute Mind. For transcendentalism the problem is "how are things known separately at all?"

The speaker dealt with these opinions critically, not espousing either one himself. He concluded by abandoning the attempt made in his *Principles of Psychology* to formulate mental states as integers, and to refer all plurality to the objects known by them. Practically the metaphysical view cannot be excluded from psychology-books. 'Contents' have parts, because in intuitive knowledge contents and objects are identical; and psychology even as a 'natural science' will find it easier to solve her problem of tracing the conditions that determine what objects shall be known together by speaking of 'contents' as complex unities. [The address will be printed in full in the *Psychological Review* for March, 1895.]

- (2) *Minor Studies and Notes on New Apparatus.* By DR. E. C. SANFORD, Clark University.

The four papers reported were on the following topics: 1. Comparative Observations on the Indirect Color Range of Children, Adults, and Adults Trained in Color; by Geo. W. A. Luckey. (This study was made in the psychological laboratory of the Leland Stanford, Jr., University.) 2. A Study of Individual Psychology, by Miss Caroline Miles. 3. The Memory Span and Attention, by Dr. Arthur H. Daniels. 4. On the Least Observable Interval Between Stimuli Addressed to Disparate Senses and to Different Organs of the Same Sense, by Miss Alice J. Hamlin; 5. Notes on the Binocular Stroboscope, a Model of the Hemispherical Field of Regard, and Diagrams for an Optical Illusion by E. C. Sanford. [All of these papers are printed in full in this number of the JOURNAL.]

- (3) *The Psychic Development of Young Animals and its Physical Correlation.* By T. WESLEY MILLS, Professor of Physiology in McGill University, Montreal.

As the comparative method of embryology and the doctrine of organic evolution have revolutionized biology, it must be expected that they or their analogues will at least greatly modify modern psychology. To learn how and when psychic processes originate is a long step towards understanding them; and as these processes in animals lower in the scale than man are presumably simpler, it is desirable that they be studied both in the mature animal and in the young developing one. Accordingly the writer has for some years been engaged in this task and has now made fairly complete researches on the psychic development of the dog, cat, rabbit, guinea-pig, etc. An attempt has been made to keep a record, in the form of a diary, not only of psychic but of contemporaneous physical changes. A special series of experiments has been made on the brains of young animals with a view of determining when cortical localization is established, in what order, etc. This work is not yet complete. Incidentally the subject of localization in the mature animal has been investigated and some generally accepted conclusions found unreliable, as well as others confirmed.

- (4) *On the Distribution of Exceptional Ability.* By Professor J. MCKEEN CATTELL, Columbia College.

A study of the mental traits, and of the works of great men forms an interesting chapter in psychology, and while we are undertaking to make psychology an exact science, it is an advantage to secure quantitative results. When anecdotes are published telling us that certain great men have inherited or bequeathed their talents, were insane, immoral, precocious, versatile, or the like, it is of interest, but we sometimes imagine that other examples might be quoted with opposite results or similar traits found in ordinary people. We need to be able to affirm that a man, who has accomplished work making him eminent, is more likely to be insane (according to a proper definition of insanity), than the average man, in a given ratio, and that this ratio varies in such and such a way for men whose work or character was of a given definable sort. And so in all cases quantitative results should be secured. We should be able to say that a man who is a great painter is just so much more likely to be a great poet as well, than is a great soldier or than is the average man.

The first requirement for such a study is a list of great men

secured by an objective method. The 1000 most eminent men have been selected by collating the space given to them in different biographical dictionaries and encyclopædias. The method secures impartiality and an assignable degree of accuracy, it being possible to give a probable error to each man. The list, of course, only gives a man's place in contemporary interest, but this would agree closely with the average verdict of the best judges as to his importance in history. The exact composition of the list is not, indeed, a matter of much importance for the end in view—an objectively selected list of great men being what is wanted. The list was shown at the meeting, curves were exhibited demonstrating the distribution in time and race of the 1000 men, and attention was called to some facts brought out by the curves.

- (5) *Sensibility to Pain by Pressure in the Hands of Individuals of Different Classes, Sexes and Nationalities.* By Dr. ARTHUR MACDONALD, Bureau of Education, Washington.

TABULAR STATEMENT OF RESULTS.

No.		Total No.	RIGHT HAND.			LEFT HAND.		
			No. Requiring More Pressure in r. h.	Totals in Kilogrammes.	Averages Kilogrammes	No. Requiring More Pressure in l. h.	Totals Kilogrammes.	Averages Kilogrammes.
1	2	3	4	5	6	7	8	9
1	American Professional Men,	20	14	74.50	3.72	5	65.25	3.26
2	American Business Men,	14	6	85.25	6.08	6	87.75	6.05
3	American Women—non-laboring class,	27	13	93.25	3.45	6	91.83	3.38
4	English Professional Men,	17	9	88.50	5.20	6	87.25	5.13
5	English Women—non-laboring class,	7	4	43.00	6.14	2	44.25	6.32
6	German Professional Men,	6	5	31.25	5.20	1	29.00	4.83
7	Salvation Army members, London,	8	6	73.25	9.15	2	51.00	7.62
8	Slum Men in Chapel-Rouge, Paris,	9	3	122.50	13.61	2	119.50	13.27
9	Boston Army of the Unemployed,	34	16	332.50	9.77	14	333.75	9.81
10	Women in "Maisons de Tolance," Paris,	9	3	82.00	9.00	5	84.25	9.36
11	Epileptic Patients—laboring people,	3	1	28.00	9.33	1	27.00	9.00
12	Odd ones, men in Paris,	7	4	28.25	4.03	3	26.25	3.75
13	Odd ones, men in different countries,	18	10	96.25	5.34	5	89.50	4.97
14	Men in general,	142	76	1012.75	7.13	19	979.50	6.89
15	Women in general,	46	21	230.50	5.01	15	233.08	5.06

The preceding experiments were made incidentally upon different classes of people. Quite a number of university specialists interested in the subject were experimented upon. The middle of the palmar fossa was chosen and Prof. Cattell's algometer was employed.

Should these results be proved to be generally true by experiments on larger numbers of people, the following statements would be probable:

I. The majority of people are more sensitive to pain in their left hand. (Only exception is No. 10, cols. 4 and 7.)

II. Women are more sensitive to pain than men. (Nos. 14 and 15, cols. 6 and 9.) Exceptions are: comp. Nos. 4 and 5, cols. 6 and 9. It does not necessarily follow that women can not endure more pain than men.

III. American professional men are more sensitive to pain than American business men (comp. Nos. 1 and 2, cols. 6 and 9); and also than English or German professional men (comp. Nos. 1, 4 and 6, cols. 6 and 9).

IV. The laboring classes are much less sensitive to pain than the non-laboring classes (comp. Nos. 1, 2 and 9, cols. 6 and 9.)

V. The women of the lower classes are much less sensitive to pain than those of the better classes (comp. Nos. 3, 5 and 10, cols. 6 and 9).

VI. In general, the more developed the nervous system, the more sensitive it is to pain.

*Remark:* While the thickness of the tissue on the hand has some influence, it has by no means so much as one might suppose *a priori*; for many with thin hands require much pressure (Nos. 5 and 10, cols. 6 and 9).

(6) *The Freedom of the Will.* By BROTHER CHRYSOSTOM, Manhattan College, New York.

The positive results of the latest studies of the will, through introspection and experiment, are in striking accord with the teachings of the Schoolmen. The appetencies of Aristotle have been replaced by conation, which, if considered in the form of attention, is either *univocally conditioned*, and then corresponds to the sensitive appetite of scholastic philosophy, or is *equivocally conditioned*, and then does not essentially differ from the volition of earlier philosophers. But since equivocally conditioned attention may include among the objects attended to even the attending subject, it must be a spiritual action, for matter is incapable of such reflexive process. In other words, the attending mind is a rational soul. In this light, *apperception* may be characterized as the distinctive quality of conation. But apperception supposes at least such intellectual action as is contained in conception, and this in turn supposes sensation; and thus a point of contact is made with Münsterberg's theory.

Neither a purely autogenetic nor a purely heterogenetic theory of will accounts for all the facts. For conation is not a mere combination of sensations, nor a resultant of affection and sensation, nor does it consist in affection alone. Again, peripheral excitation fails to account for the active element of conation, while exclusively central excitation overlooks external influence. We must, then adopt a theory midway between these two extremes. Wundt, therefore, must be held to state rather the physiological correlate than the psychical fact.

The chief difficulty as to the freedom of the will is found in its connection with the law of causality, which law, however, belongs

to the domain of metaphysics, only indeterminism coming within the limits of psychology. *Cause* essentially connotes the inflowing of the agent upon some subject. But *free* and *uncaused* are not synonyms. All action of the will is voluntary, yet not all its action is free. For although the presentation of pleasurable or painful objects to the will, *i. e.*, the motives, together with the agent's temperament and general subjective condition determine the spontaneous impulse of his will, yet it is a fact of conscious experience that he often can and does put forth at the same time an anti-impulsive effort. Only actions made under these conditions are rightly called free, and they imply essentially the power to will or not to will.

Yet the law of causality, even in that narrower meaning, which obtains in the physical sciences, also applies to free actions in the mass, for we can determine with more or less probability what men taken generally will do under given circumstances. In conclusion, Wundt's assertion that a free act is necessarily an uncaused one, is virtually an admission that the will is superior to material force, and is therefore spiritual.

(7) *The Consciousness of Identity and So-Called Double Consciousness.* By Prof. GEORGE T. LADD, Yale University.

The questions in debate concerning the consciousness of identity and so-called double consciousness can not be intelligently discussed without a critical examination of the conceptions involved. What then do we mean when we speak of a thing or a mind as remaining "identical" or self-same, through various changes of states? To uncritical thought it doubtless seems as though some unchanging "core" of reality belonged to every being of which we feel ourselves entitled to speak in this way. But philosophical criticism seems rather to assure us only of the proposition: *The real identity of anything consists in this, that its self-activity manifests itself in all its different relations to other things as conforming to law, or to some immanent idea.*

From this it follows that change, in itself, is not inconsistent with identity being maintained. On the contrary, it is the very character of the actual changes observed or inferred, which leads either to the affirmation or to the denial of identity. This principle may be applied to whatever is popularly called a thing, and also to those hypothetical elements of all material things, the so-called atoms.

When we turn to consider the peculiar identity of mind, we find that the affirmation of such identity can never be taken as a denial of change. Indeed, the very real being of mind seems dependent upon change,—in the form, namely, of successive states of consciousness. So that the variety and greatness of the changes experienced *may* heighten, rather than diminish the reality and validity of the consciousness of identity, properly described and understood.

Now, if we inquire in what consists this conscious identity, we see that it is, and can be, nothing but that which is given to consciousness in all states of self-consciousness, of recognitive memory, and of reflective thinking about the Self. To have these states of consciousness is to be conscious of being identical and self-same. And degrees of the consciousness of identity, as it were, are connected necessarily with all real mental development.

In accordance with this metaphysical analysis, we may hopefully and even confidently venture upon the attempt to account for the phenomena of so-called double consciousness, in accordance with certain well-known psychological principles. Of these one may be spoken of as the principle of "psychic automatism." Under this



principle, we note in many of our most familiar experiences such a diremption of successive states, or of very complex present states into two-fold combinations of elements, as makes the full impression of *two* interacting personalities rather than of one person. Yet very subtle and unrecognized or dimly recognized influences of one upon the other, of the Self-conscious Ego upon the automaton, or the reverse, may be distinguished by psychology. All this is popularly expressed either by saying, "I have the automaton," or "the automaton has me;" "I am the automaton," or "the automaton is not-me." Illustrations of all this may be derived from the simpler or more complex bodily operations as under the influence of semi-conscious states, and in turn influencing them; from many deeds of skill and valor and even of a seemingly high order of intelligence; from the phenomena of artistic and religious inspiration, etc.

Closely akin to this is the most effective working of another principle, which we will call that of a "dramatic sundering of the Ego." We can more or less consciously and intentionally, or as forced by circumstances, so "put ourselves into" another character as virtually to divide the Self into two or more selves, whose appropriate states of consciousness either follow in rapid succession or seem to occur almost simultaneously. The phenomena of dreams, the plays of children, the experience of many actors, the phenomena of certain states of inspiration, the imaginative genius of certain writers, like Balzac notably, are instances in point here. Indeed, the very nature of ethical consciousness in its highest form of manifestation seems necessarily to involve such a dramatic sundering of the Ego. In not very infrequent cases, three interacting personalities become manifest in consciousness. These may be described as the tempter or bad angel, the good angel, and the self as the "torn one" between the two.

In fine, it seems fair to expect that by a further understanding and more extended application of these, and perhaps other cognate psychological principles, even the most extreme hypnotic cases of so-called double consciousness may finally be explained.

(8) *A Preliminary Report on a Research into the Psychology of Imitation.* By Prof. JOSIAH ROYCE, Harvard University.

This report first briefly described a collection of experiments now under way at the Harvard Psychological Laboratory, and then passed to some reflections suggested by these experiments, relating to the definition of the functions to be grouped together under the name of imitation. As the text of the report is to appear in the *Psychological Review* the present summary need not be extended. The experiments, which at present are only in their first beginning, have thus far been confined to the imitation of somewhat complex series of taps, given by an electric hammer, and arranged in rhythms. The subjects of the experiments imitate the taps, after hearing each rhythm, through repeating the hammer-strokes by means of an electric key. The rhythms as given and as imitated are recorded on the kymograph. The effects of habit in successive imitations of the same rhythm, the influence of speed and of other factors upon success in imitation are under study. The complexity of the rhythms studied in these experiments forms one special difference of this enterprise when compared with other experimental studies of rhythm; for the purpose is to study, not the rhythmic consciousness as such, but the imitative functions.

Notes of subjective experiences, taken down during or imme-

diately after each experiment, by the subjects concerned, have already given the suggestion for those considerations concerning the definition of imitation, with which the major part of the report was taken up.

- (9) *The Classification of Pain.* By Prof. CHARLES A. STRONG, University of Chicago.

This paper was a discussion of the current theory that pleasure and pain are always given as aspects of a content distinct from themselves—the feeling-tone, “quale,” or aspect theory. It sought to test this theory by considering its application to the case of cutaneous pain.

1. Neurologically, we know no facts in regard to cutaneous pain which decisively contradict the theory. For special pain-nerves are more than doubtful; and there is a symptom of locomotor ataxia, consisting of hyperalgesia to heat or cold without hyperalgesia to pressure, and even with analgesia to pricking and pinching, which seems to prove that some pains are distinctively pains of temperature. The condition of analgesia, moreover, while it implies distinct paths for pain in the spinal cord, may be reconciled with the aspect theory by holding that the sensation called forth through these paths, is a tactile or temperature sensation in painful phase.

2. But, introspectively, it is impossible in certain cases to carry out the analysis for which the aspect theory calls. Extreme pressure, heat and cold produce the same sensation—not of heat, or cold, or pressure, but simply of pain. This sensation (*Schmerz*) does not admit of analysis; it is impossible to separate it into a content and an accompanying feeling-tone. But it may call forth an emotional reaction in the shape of a feeling of the disagreeable or intolerable (*Unlust*).

In conclusion, the inference was drawn that pain, being a sensation, may be localized and may leave behind images. [The paper will be printed in the *Psychological Review* for May, 1895.]

- (10) *A Theory of Emotions from the Physiological Standpoint.* By Prof. G. H. MEAD, University of Chicago.

Professor Dewey having shown that it is possible to make a complete teleological statement of the emotions along the line of the discharge theory, it is interesting to see how far such a statement may be paralleled by a physiological theory. This would involve also a physiological theory of pleasure and pain. As pain can be differentiated from the sensations in connection with which it generally appears in consciousness, as it shows itself under circumstances in which the tissue of the end organs or the nerves themselves are affected, and as in the diseases, in which we find pain as a constant concomitant those parts are affected, which are richly supplied with blood vessels by means of supporting and nourishing tissues (Rindfleisch's *intermediärer Ernährungsapparat*), and as in those diseases which pass usually without pain (as in the catarrhs of the various mucous membranes) the tissues affected are poorly supplied with such blood-vessels, and enter into relation with the capillaries generally through the lymph, for the purpose of secretion, it becomes at least probable that, physiologically, pain may be considered as the interference through poisons or violence or otherwise with the process of nutrition as carried out in the finer arteries and blood-vessels. Pleasure must from this standpoint be considered as physiologically the normal or rather heightened process of nutrition in the organs, and the nerve paths

which connect these with the central nervous system, would be probably the sympathetic.

In the simple instinctive act that lies behind every emotion, the vaso-motor system is called into action by the enlargement of the small blood-vessels in the muscles and sweat glands. To maintain the blood pressure, the finer blood-vessels in the abdominal tracts are closed by the constrictors of that region, and the action of the heart may also be increased by the accelerators. The vaso-motor system thus is, in these simpler instinctive acts, in automatic connection with the senso-motor. The act must commence before the flow of blood can take place. It is in connection with this increased flow of blood, that we have to assume the emotional tones of consciousness arise according to the discharge theory. Within the act it would answer only to interest. It is in the preparation for action that we find the qualitatively different emotional tones, and here we find increased flow of blood before the act. We find also what we may term symbolic stimuli, which tend to arouse the vaso-motor processes, that are originally called out only by the instinctive acts. These stimuli in the form in which we can study them, seem to be more or less rhythmical repetitions of those moments in the act itself, which call forth especially the vaso-motor response. In this form they are recognized as æsthetic stimuli, and may be best studied in the war and love dances. It is under the influence of stimuli of this general character that the emotional states and their physiological parallels arise. The teleology of these states is that of giving the organism an evaluation of the act before the co-ordination that leads to the particular reaction has been completed.

- (11) *Desire as the Essence of Pleasure and Pain.* By Dr. D. S. MILLER, Bryn Mawr College.

Pleasure and pain, in the discussion now going forward, as to their classification and physical basis, are commonly treated as among our passive sensory experiences; at all events, it would seem to most psychologists a somewhat stupid paradox to assert that they were in any sense motor phenomena. Yet there is solid ground for holding this paradox; for maintaining, at least, that pleasantness (the quality which along with their specific differences of character marks all so-called pleasures) and painfulness (the quality which along with their specific differences of character marks all so-called pains) are essentially motor facts. A pain is an intolerable feeling; different as they are among themselves, all pains have this, at least, in common, that they are intolerable. No other feeling is intolerable; if it were we should call it a pain. It would then, not be easy to refute the proposition that painfulness is intolerableness; that so-called pains have no other common class-attribute. Now intolerableness is the quality of uniformly provoking a certain bodily disquietude or rebellion, issuing, where the nature of the case permits, in an attempt to escape from the offending irritant. And this is a motor phenomenon. The various *disagreeables* (a term with which "pains" in my meaning is convertible) a needle-prick, a headache, a burn, the numb internal ache of cold hands, the taste of quinine, the smell of assafœtida, the scratching of a slate-pencil, "gnawing pains," "shooting pains," muscular fatigue, disappointment, humiliation—these have no such intrinsic resemblance in sensational complexion as we find among different sights or sounds—between the members of the class of visual, or of the class of auditory sensations; they are similar only in the extrinsic fact that they all alike are accompanied by a bodily

reaction—some flinching or shuddering or convulsion, some restiveness or inner tension—which tends then and afterwards to pass into movements of avoidance, escape or repulse. Now, these movements and the tendencies to them are what we know as *aversion* in its various forms and degrees.

If painfulness is intolerableness, pleasantness on similar grounds, is the quality of being *welcome*. The bodily reaction of *gusto* is as characteristic, though not so obtrusive as that of intolerance; and it tends to pass into movements of retention or procurement. These movements and the tendencies to them are what we know as *desire* in its various forms and degrees.

- (12) *Pleasure and Pain Defined*. By Prof. SIDNEY E. MEZES, University of Texas.

It is necessary to find some fact or group of facts that is present whenever we experience pleasure and absent whenever we do not, and another fact or group of facts present and absent with pain. The frequent confusion of unpleasants with pains is very misleading. Unpleasants are of three kinds: memories and expectations; sensational unpleasants that are not pains—bitter tastes, *e. g.*; and sensational unpleasants that are pains—a toothache, *e. g.* We have here to define pleasure and the unpleasant. Attempts have been made to define pleasure-pains as sensations, as emotions, and as making up the genus of which sensations and emotions are two species. The fact that there is evidence for each of the first two theories shows that neither is exhaustive and competent. Besides the existence of pleasant and unpleasant memories, expectations, and fancies, invalidates all three. Many hold that pleasure-pains are ultimate ideas, simple and undefinable, like colors. There are strong positive objections to this theory, but negatively and for our purposes, it suffices that this theory is a last resort and that its supporters must overthrow all other theories before legitimately 'claiming it as established. This theory is valuable and true in so far as it points out that neither pleasures as a whole, nor unpleasants as a whole, have any properties in common. It overlooks the possibility that there may be something invariably co-present with pleasures, and some other invariably co-present with pains, and that these two may be the signs to us of the presence of pleasures and pains—what induces us to call a state pleasant or unpleasant. Now Plato, Aristotle, Hobbes, Kant and Schopenhauer agree that harmony or good adjustment is the mark of pleasure, ill-adjustment that of pain. Not all these writers point out the terms between which the adjustment is to obtain, but recently Wundt and Ward have held that the adjustment is of attention to its object. This immediately plausible suggestion of attention and adjustment must be examined. Clearly, what is not attended to is indifferent since uninteresting. Further, immediate attention to pleasures is not the same as that to pains; the former is easy and natural, the latter enforced and obstructed. Again, derived attention, always to unpleasants, is invariably obstructed by the more pleasant rivals to attention also present. May it not be that attention without obstruction is the mark of pleasure, attention with obstruction that of pain? The evidence for this view may be thus suggested: All states of intensely concentrated attention are pleasant, hard thinking, hard play, strenuous work; all states of *internal* conflict—hesitation, practical puzzle, co-present irreconcilable impulses, morbidly insistent ideas, etc.,—are unpleasant, and further, physical pains, owing to their great intensity, reverberate widely and naturally set up mutually obstructive reflexes.

- (13) *Emotions versus Pleasure-Pain.* By Mr. HENRY RUTGERS MARSHALL, New York.

Mr. Marshall reviewed his "genetic" argument in relation to the Emotions, emphasizing the contention that the typical Emotions are named, because (1st) they correspond to relatively fixed relations between the physical elements reacting, and because (2d) these reactions are immediate. Failure of these two conditions can be traced where "instinct feelings" have no emotional names. Emotions are in their nature irregular in recurrence, and to be of value must be forceful in reaction; hence Emotions are not usually lost to consciousness as many "instinct feelings" are, although, if these Emotions become rhythmical and weak, they act as other states do in relation to fixity of habit. Pleasure and pain relate to *organic*, while Emotions relate to *individual* or *racial* effectiveness or ineffectiveness; therefore their genesis cannot be considered to have been co-incident in time, nor to be of the same type.

The identification of Emotion and Pleasure-Pain in "Feeling" is dependent upon the validity of the tripartite division of mind; which is upheld by metaphysical postulation, but not by psychological evidence. Prof. Croom Robertson argued that the exhaustive categories, The True, The Good, The Beautiful, themselves proved the validity of the division. But the existence of the division is explicable in quite another way, as due to the search for Reality. In relation to mental experience in general this search gives us The True; in relation to impression it gives us The Beautiful; and in relation to expression it gives us The Good. If we are to discard this classical tripartite division, we should be able to account for its persistence. It results from an attempt to unify two diverse classifications, both bipartite; viz., 1st, the receptive-reactive classification, and 2d, the subjective-objective classification:—Sensation and Intellect (Knowing) being bound together on both the receptive-reactive and on the subjective-objective schemes; Pleasure-Pain and Emotion (Feeling) being bound together on the the subjective-objective scheme, the receptive-reactive quality being unmarked; Will being marked by a common and co-ordinate emphasis of the reactive and also of the objective qualities. The existence of this tripartite division, thus explained, can therefore no longer be used as an argument for the bond between Emotion and Pleasure-Pain, which states are distinctly separable, the relation between them being this: The emotions are complex psychoses which almost invariably involve repressions or hypernormal activities, either of which are determinants either of pleasure or of pain.

- (14) *Notes on the Experimental Production of Hallucinations and Illusions.* By Prof. W. ROMAINE NEWBOLD, University of Pennsylvania.

Prof. Newbold reported that in twenty-two out of eighty-six cases tried he had succeeded in producing illusions by causing the patients to gaze into a transparent or reflecting medium, such as water, glass, and mirrors. His most successful cases were found among young women under twenty years of age who were good visualizers, but as a majority of his subjects were young women and as the experiments were by preference made upon good visualizers, he was not inclined to lay much stress upon these conditions. The phantasm was usually preceded by cloudiness, flushes of color or of light in the medium, and varied from a dim, colorless outline to a fully developed and brilliantly colored picture. The images were

frequently drawn from the patient's recent visual experience, were sometimes fantastic and frequently unrecognised. The successive images were usually associated, if at all, by similarity, but frequently no relation could be discovered between them. Association by contiguity was excessively rare. The phantasm was frequently, but not always, destroyed by movements of the medium and by distracting sensory impressions and motor effort. Occasionally the phantasm was to a considerable degree independent of the medium, persisted for some time after the removal of the medium, and in one such case appeared to obey the laws of the after-image. The importance of such phenomena upon the question as to the value of the central component in the after-image is obvious.

No trace was observed of telepathic or other supposed super-normal agency. There seemed to be no reason for regarding the phantasms of the glass as any thing other than illusions of the ordinary types depending upon the glass as a *point de repère*. Their chief speculative importance, apart from the light which they may throw upon the after-image, lies in the fact that they present to us processes of association by similarity in concrete, sensible form, and in their possible relation to sub-conscious "automatic" processes. While the phantasms as such cannot be regarded as demonstrating the existence of such processes, it is probable that, if sub-conscious automatism exists, its products may be traceable in the phantasms of the glass. It is possible also that some specific relation exists between the hypnotic consciousness and the phantasm of the glass. Dr. Newbold found that images unrecognised by the waking consciousness were sometimes recollected by the patient when hypnotized, and, *vice versa*, experiments by Mr. F. W. H. Myers have shown that a tale related in hypnosis is sometimes presented in the glass externalise in dramatic form.

(15) *Experiments on Dermal Pain.* By HAROLD GRIFFING, Ph. D., Columbia College.

By means of an algometer transmitting pressure up to 15 kilog. the average pain threshold was found to be for forty college students, 5.5; for thirty-eight law students, 7.8; for ninety-eight women, 3.6; for fifty boys, twelve to fifteen years of age, 4.8. The palm of the hand was the place of stimulation. The most sensitive parts of the body are those where the skin is not separated from the bone by muscular and other tissues.

In eighty experiments on two observers the area was variable, areas of 10 mm., 30 mm., 90 mm. and 270 mm. being given. The corresponding average values of the pain threshold were 1.4 kilog., 2.8 kilog., 4.4 kilog. and 6.6 kilog. Thus the pain threshold increases with the area of stimulation, but much more slowly than in direct proportion.

The time in which dermal stimuli of different intensities cause pain was found by noting the time that elapsed before the appearance of pain after weights had been placed in a balance pan in such a way as to press upon the hand. The averages in seconds, based upon eighty experiments on two observers, are as follows: For 100 g., 230 secs.; for 200 g., 35 secs.; for 300 g., 10 secs.; for 500 g., 4.5 secs. Thus the time, as well as the area and intensity of stimulation, are factors in dermal pain. There is, moreover, an intensive limit below which pressure stimuli never cause pain. Above this limit the sensory effect of the time seems to be in direct proportion to that of intensity.

The pain threshold for falling weights was found to depend as much upon the height as the mass. As both the height and mass

are proportional to the kinetic energy of the moving mass, the stimulus for dermal pain in impact must be considered the energy of the striking object.

(16) *The Normal Night-Blindness of the Fovea.* By CHRISTINE LADD FRANKLIN, Baltimore.

König's announcement in May, 1894, of the very close co-incidence of the curve showing the distribution of brightness along the spectrum for (1) the totally color-blind, and (2) the normal eye in a faint light, with the curve of relative absorption of different portions of the spectrum by the visual purple (and the obvious inference therefrom that the vision of the totally color-blind and that of the normal eye in a faint light are conditioned by the presence of the visual purple in the retina) made necessary some assumption to take account of the fact that no visual purple has hitherto been found in the fovea. Two assumptions were possible,—either that the cones (and hence the fovea) do contain visual purple, but of such an extremely decomposable character that it can never be detected objectively, or that the eye of the totally color-blind person, and the normal eye in a faint light, are actually blind in the fovea. As I had already made the prediction that total color-blindness consists of a defective development of the cones of the retina (*Ztsch. f. Psych. u. Phys. der Sinnesorgane*, Bd. IV, 1892) and also that the adaptation which renders vision possible after twenty minutes in a faint light is conditioned by the growth of the visual purple (*Mind*, N. S. III, p. 103)—both predictions being naturally suggested by my theory of light sensation. I was most anxious to put the latter assumption to the test, I therefore undertook to determine, in the dark room of Prof. König's laboratory, the threshold for light sensation for different parts of the retina and for different kinds of monochromatic light (the full results of this investigation will appear later). The blindness of the fovea for faint light did not at once reveal itself; the act of fixation means holding the eye so that an image falls on the part of the retina best adapted for seeing it, and hence it would involve keeping the image out of the fovea in a faint light, if the fovea were really blind in a faint light. But after the total disappearance of the small bright object looked at had several times occurred by accident it became possible to execute the motion of the eye necessary to secure it at pleasure. It was then found that the simple device of presenting a group of small bright objects to the eye of the observer was sufficient to demonstrate the "normal night-blindness of the fovea" (as it may best be called), without any difficulty—one or the other of them is sure to fall into the dark hole of the fovea by accident. It was only by means of this arrangement of a number of small bright spots that the total blindness in the fovea of the totally color-blind boy could be detected—he had, of course, learned not to use his fovea in fixation. Prof. König then proceeded to demonstrate the total blindness in the fovea of the normal eye to blue light of wave-length about  $\lambda$  470.<sup>1</sup> [These experiments upon the normal eye were exhibited at Princeton.] It was shown that König's proof that the pigment epithelium is the only layer of the retina which is affected by red, yellow and green light is not wholly conclusive. The interpretation of the new facts, and their bearing upon the several theories of light-sensation were discussed. [This paper will appear in full in the *Psychological Review* for March, 1895.]

<sup>1</sup>Prof. v. Kries is said to have shown that the experiments in question do not establish the blue-blindness of the fovea (*Berichte der Naturforschenden Gesellschaft zu Freiburg*, IX, 2, S. 61). I have not yet had access to this criticism.

- (17) *The Muscular Sense and its Location in the Brain Cortex.* By PROF. M. ALLEN STARR.

[This paper was presented in the absence of Prof. Starr. It may be found in full in the number of the *Psychological Review* for January, 1895.]

- (18) *Psychology in the University of Toronto.* By PROF. J. G. HUME, University of Toronto.

In the University of Toronto, we begin the work in psychology, etc., in the Sophomore year. Up to that time the students are engaged in language studies, Mathematics, English History, Chemistry, Biology, etc. After the Sophomore year, they still continue some of this language study as supplemental to the philosophical course. The latter (beginning with Psychology, Logic and Theory of Knowledge in the second year; Psychology, Logic, Theory of Ethics, History of Ethics and History of Philosophy in the third year) keeps extending until in the fourth year those who have selected this course give *all* their time to the subjects of the course without any supplemental work, taking in the fourth year, Psychology, Ethics, History of Philosophy, Special Reading in the original of various selections from the whole period of modern philosophy, giving special attention to Kant and Lotze.

In Experimental Psychology: Second year, second part of the year: Demonstrations from the director, explanations of methods and practice. In the third year during the whole year, the class divided into groups, is under the charge of the director in the laboratory. In the fourth year, they are supposed to be able to undertake experiments of an independent character. Some of the enquiries started in the fourth year are continued in post-graduate work. In the present fourth year, there are sixteen honor students, conducting four sets of experiments, that is in four groups with four in each group: I. On Time-reactions (mechanical registration instead of the chronoscope). II. Discrimination of Geometrical Figures and Letters in the Field of *Indirect Vision*. III. Discrimination of Color-Saturation. IV. Discrimination and Reproduction of Rhythmic Intervals. In post-graduate study, there are two enquiries being continued from last year: I. Estimation of Surface-Magnitude. II. On Certain Optical Illusions. The director of laboratory, Dr. August Kirschmann, has in the press a recently finished investigation upon the nature of the perception of *metallic lustre*. [This account was presented in the absence of Prof. Hume.]